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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GEORGE HENRY FORMAN and BIN ZHANG

Appeal 2009-004168
Application 10/733,750
Technology Center 2100

Decided: March 8, 2010

Before JAMES D. THOMAS, LEE E. BARRETT,
and JOHN A. JEFFERY, *Administrative Patent Judges*.

THOMAS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1, 4 through 13, 15, 17 through 21, and 23. Appellants have canceled claims 2, 3, 14, 16, and 22.

We affirm.

INVENTION

A process for rapid data recovery, data cleaning and an automated self-maintenance of the data recovery mechanism is provided. “Dirty” input data records are used in conjunction with and to build and revise a fast indexing table wherein index keys point to “clean” data records with which the input data should be rightly associated. Mechanisms for automated revision of the indexing table are described. The table forms a tool useful in data mining and knowledge discovery to analysis of heuristic processes. (Abstract, ll. 2-8; Figs, 1 and 2).

REPRESENTATIVE CLAIM

1. A heuristics analysis tool embodied in a computer-readable storage medium, comprising:

a persistent table, having clean data records and key records wherein at least one key record is associated with each clean data record, each key record having at one field of data from the associated clean data record; and

heuristic-base routines to match newly received data records to the key records in the persistent table, the heuristic-base routines to iteratively clean the newly received data records by modifying the newly received data records in response to no match occurring between the received data records and the key records in the persistent table.

PRIOR ART AND EXAMINER’S REJECTIONS

The Examiner relies on the following references as evidence of unpatentability:

Kuga	U.S. 5,276,616	Jan. 4, 1994
Mori	U.S. 5,806,058	Sep. 8, 1998
Haimowitz	U.S. 5,819,291	Oct. 6, 1998

Vagnozzi	U.S. 6,070,164	May 30, 2000
Commons	U.S. 2002/0069195 A1	Jun. 6, 2002

All claim on appeal, claims 1, 4 through 13, 15, 17 through 21, and 23 stand rejected under 35 U.S.C. § 103. As evidence of obviousness in a first stated rejection, the Examiner relies upon Haimowitz in view of Commons as to claims 1, 4, 5, 7, 8, 15, 17 through 19, 21, and 23. To this combination of references the Examiner adds Mori as to claims 6 in a second stated rejection. Next, in a third stated rejection of claims 9 through 13, the Examiner relies upon Haimowitz in view of Commons, further in view of Kuga. Lastly, as to claim 20, the Examiner relies upon Haimowitz in view of Commons, further in view of Vagnozzi.

CLAIMS GROUPING

With respect to the first and third stated rejections, the Appellants argue each independent claim 1, 9, 15, and 23 separately. No other claim on appeal is argued.

ISSUE

Has the Examiner erred in finding that the combination of Haimowitz and Commons teaches the subject matter of independent claims 1, 23, and 15 within the first stated rejection and the subject matter of independent claim 9 with respect to the combination of teachings of Haimowitz, Commons, and Kuga?

FINDINGS OF FACT

1. Heuristic-type programs of an iterative nature where known in the art as admitted by Appellants in paragraph [0003]. Additionally, Appellants admit that prior art data cleaning programs existed as expressed at paragraph [0017].

2. The abstract of Haimowitz teaches:

In this invention there is a method and system for matching new customer records to existing customer records in a database. The new customer records are validated for quality and normalized into a standard form. A hash key is selected to generate a candidate set of records from the existing records in the database that likely matches the new customer records. The new customer records are then matched to each of the records in the candidate set. Once the matching has been performed, a decision is made on whether to create a new customer record, update an existing record, or save the new record in a pending file for resolution at a later time. In another embodiment, there is a methodology for learning matching rules for matching records in a database. The matching rules are then used for matching a new customer record to existing records in a database.

Figure 1 of Haimowitz illustrates an overall system perspective of his invention with figures 2 and 6 illustrating in part basic iterative-type heuristic programs. Figure 4 illustrates a training functionality which is initially discussed here:

In accordance with another embodiment of the present invention, there is provided a method and system for generating rules for matching data in a database containing a plurality of records each having a collection of fields. In this embodiment, a sample of training data is obtained from the database. Similar pairs of records from the sample of training data are then identified. Field matching functions are applied to each of the corresponding fields in the similar pairs of

records. Each field matching function generated a score indicating the strength of the match between items in the field. An intermediate file of vectors containing matching scores for all of the fields from each of the similar pair of records is then generated. The intermediate file of vectors are then converted into a plurality of matching rules for matching data in the database. The plurality of matching rules can then be used for matching a new data set containing a record and a collection of fields to an existing data set in a database containing a plurality of records each having a collection fields.

(Col. 2, ll, 10-28).

Within these teachings, it is noted that the matching functionality generates a score indicating the strength of the match between items in the field. This teaching is also emphasized at column 6, lines 15 through 18, where it stated that:

“[e]ach comparison generates a matching score indicating a degree of match between the record from the new data set and each record in the candidate set.”

A similar statement is made at column 6, lines 33, through 35, where it is stated that, in the learning function of figure 4, “[e]ach field matching function generates a score indicating the strength of a match between items in the corresponding fields.”

Significantly, Haimowitz teaches at column 9, lines 53-57, the following:

If there are multiple “definite matches” or no “definite matches”, but one or more “maybe matches”, then those candidates are marked with a pending flag for entry into the pending file 22. These candidates are then resolved at a later time.

This general matching functionality is attributed to matcher 20 in figure 1 as well as the corresponding pending file 22 in that figure.

3. The abstract of Commons teaches:

An iterative search technique is used to quickly and accurately locate information in a database, such as one storing information about digital versatile discs (DVDs). First, a presumably unique search key is generated for an unidentified DVD and compared with corresponding keys in a database. If no match is found progressively less specific information is used to generate a series of search keys that are similarly compared with corresponding keys in the database. If at least one possibly matching record is found, it is determined whether the best matching record can be considered a match, otherwise less specific information is used to search for a match, otherwise less specific information is used to search for a match until predefined least specific information is used.

The iterative heuristic nature of Commons' invention is illustrated in figures 3A-B, the discussion which begins in paragraph [0058] through the end of the patent as relied upon by the Examiner.

4. Kuga's abstract indicates that the generation of indexes is done quickly and accurately according to his database analyzing techniques. Figures 7, 14, and 28 illustrate the use of inflection, variants, and syntactic analyses done in an iterative manner to determine matches and close matches.

PRINCIPLES OF LAW

OBVIOUSNESS

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

The Supreme Court reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.* at 417. The Court noted that “[c]ommon sense teaches . . . that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420.

The Federal Circuit recently concluded that it would have been obvious to combine (1) a device for actuating a phonograph to play back sounds associated with a letter in a word on a puzzle piece with (2) a processor-driven device capable of playing the sound associated with a first letter of a word in a book. *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007). In reaching that conclusion, the Federal Circuit recognized that “[a]n obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not.” *Id.* at 1161 (citing *KSR*, 550 U.S. at 416). The Federal Circuit relied in part on the fact that Leapfrog had presented no evidence that the inclusion of a

reader in the combined device was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Id.* (citing *KSR*, 550 U.S. at 418).

Dovetailing with this precedent, we note further that the test for obviousness has been further characterized as not whether the features of a secondary reference may be bodily incorporated into the structure of a primary reference. It is also not that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d 414, 425 (CCPA 1981); *In re Young*, 927 F.2d at 591.

The prior art relied on to prove obviousness must be analogous art. As explained in *Kahn*,

the ‘analogous-art’ test . . . has long been part of the primary Graham analysis articulated by the Supreme Court. *See Dann [v. Johnston]*, 425 U.S. [219,] 227-29 (1976), *Graham [v. John Deere Co.]*, 383 U.S. [1], 35. The analogous-art test requires that the Board show that a reference is either in the field of the applicant’s endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection. *In re Oetiker*, 977 F.2d 1443, 1447 (Fed.Cir.1992). References are selected as being reasonably pertinent to the problem based on the judgment of a person having ordinary skill in the art. *Id.* (“[I]t is necessary to consider ‘the reality of the circumstances,’ - in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the invention.” (quoting *In re Wood*, 599 F.2d 1032 (C.C.P.A. 1979))).

Kahn, 441 F.3d at 986-87. *See also In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992) (“[a] reference is reasonably pertinent if, even though it may be in a

different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."").

ANALYSIS

We refer to, rely on, and adopt the Examiner's findings and conclusions set forth in the Answer. Our discussions will be limited to the following points of emphasis.

The teachings we have noted, in addition to those relied upon by the Examiner in the Answer, in our finding of facts 2 through 4 clearly indicate to one of ordinary skill in the art what Appellants have admitted to be known in the art with respect to iterative, heuristic processing programs as well as data cleaning operations that modify newly received data records in response to the absence of a matched function occurring.

The Examiner has correlated each claimed feature at pages 3 through 8 of the Answer in the Examiner's statements of the rejections of the independent claims on appeal, such as to even include footnotes referencing teachings in the references to corresponding claim terms. Moreover, the Examiner's Responsive Arguments beginning at page 15 of the Answer through the end of the Answer address each of the two major thrusts of Appellants' arguments with respect to each independent claim 1, 23, 15 and 9, in this argued order, to include positions indicating that all limitations of these respective claims are disclosed by the collective teachings of the references as well as a motivation or suggestion to combine them consistent with the earlier-noted case law within this opinion.

We agree with the Examiner's basic view that the database searching and management techniques of the applied prior art are consistent with and indicate that they are essentially in the same field of invention as Appellants' claims presented on appeal. Pages 17 and 20 of the Answer, for example, indicate that the Examiner has mapped key terms from the respective claims to the teachings of the references to thus indicate correspondence of or the identity of the claimed concepts to those taught in the applied prior art even though slightly different wording has been used within the applied prior art as compared to that which is actually recited in the claims.

Our brief finding of fact 3 emphasizes from our perspective what the Examiner has already relied upon in Commons. The actual iterative search technique set forth in Commons in the initial sentence of the abstract is taught in the initial sentence of paragraph [0058] relied upon by the Examiner and provides a sufficient motivation of combinability to those general teachings of Haimowitz such as to quickly and accurately locate information in the database. As we noted in finding of fact 4 with respect to Kuga, corresponding quick and accurate generation of index entries was taught in the abstract of this reference for database searching as well.

From our analysis of Haimowitz and Kuga, we consider Kuga to be cumulative for the purposes relied upon by the Examiner as to the teachings we noted in detail in finding of fact 2 as to Haimowitz. The so-called "near match" capability is plainly taught in our column 9 reference in Haimowitz as a type of "maybe match" in addition to "definite matches" and the absence of definite matches which plainly correspond to the matching and no matching features recited in the claims on appeal. The matching

functionality we noted in several locations in this reference in our finding of fact 2 plainly indicates that the matching generates a score indicating the strength or degree of matching which additionally corresponds to the claimed feature of “near matches” recited in independent claim 9.

CONCLUSION AND DECISION

In the absence of a Reply Brief filed in this appeal to contest the Examiner’s responsive arguments in the answer, the weight of the arguments and evidence strongly supports the Examiner’s views, and Appellants have not shown that the Examiner erred in finding that the combination of teachings of Haimowitz and Commons is proper within 35 U.S.C. § 103 and teaches the claimed subject matter in representative independent claims 1, 23, and 15, respectively. The additional teachings relied upon by Kuga are properly combinable with Haimowitz and Commons and collectively teach the subject matter of representative independent claim 9 on appeal.

Therefore, all claims on appeal are unpatentable.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. §1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

Appeal 2009-004168
Application 10/733,750

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